

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A curve's radius estimation device for estimating a curve's radius of a road on which a vehicle shall run, comprising:

a vehicle speed sensor that detects an actual speed of the vehicle;

a yaw rate sensor that detects an actual yaw rate of the vehicle;

a steering angle sensor that detects an angle of a steering wheel handled by a driver of the vehicle as an actual steering angle; and

an estimator that estimates the curve's radius on the basis of the actual vehicle speed detected by the vehicle speed sensor, the actual yaw rate detected by the yaw rate sensor, and the actual steering angle detected by the steering angle ~~sensor~~ sensor, wherein the estimator comprises:

a base value estimation part that estimates the curve's radius as a base value on the basis of the actual vehicle speed and the actual yaw rate but not of the steering angle; and

an estimation part that determines an amount of correction for the base value on the basis of physical quantity regarding the steering angle, and estimates the curve's radius by correcting the base value with the amount of correction.

2. (Canceled).

3. (Currently Amended) The curve's radius estimation device as claimed in ~~claim 2, claim 1,~~ the estimator further comprising an enabling part enables the estimation of the curve's radius when an expected value of the curve's radius is equal to or below a predetermined value and a state of temporal variation of the curve's radius does not exceed a predetermined state for a predetermined time period or longer.

4. (Currently Amended) The curve's radius estimation device as claimed in claim 3, the estimator further comprising a setting part that sets the predetermined time period such that the predetermined time period is shortened as the actual vehicle speed increases.

5. (Currently Amended) The curve's radius estimation device as claimed in claim 1, the ~~estimator comprising an~~ estimation part estimates the curve's radius such that ~~the~~an estimate of the curve's radius responds to ~~the~~a variation of the actual steering angle more sensitively when an expected value of the curve's radius is relatively small than when the expected value is relatively large.

6. (Currently Amended) The curve's radius estimation device as claimed in ~~claim 2,~~ claim 1, the estimator further comprising a part that determines the amount of correction for the base value using a product of an amount of variation of the base value per a certain range of the actual steering angle, an amount of variation of the actual steering angle per a certain time period, and a coefficient that increases as an expected value of the curve's radius decreases, and estimating the curve's radius by correcting the base value with the determined amount of correction.

7-15. (Canceled).

16. (Currently Amended) The curve's radius estimation device as claimed in claim 1, the estimator comprising a determination part that determines that the vehicle is under a straight running state when the actual vehicle speed is equal to or below a predetermined speed regardless of detected values of the actual yaw rate.

17. (Canceled).

18. (Currently Amended) A preceding vehicle existence determination apparatus comprising:

the curve's radius estimation device claimed in claim 1;

a sensor provided in the vehicle detects an object located in front of the vehicle; and

a determiner that determines a present lane probability in which a preceding vehicle is running on the same lane with the present vehicle when the object detected by the sensor is a moving object that is the preceding vehicle, and determines that a preceding vehicle exists for which the present vehicle is tracking when the determined present lane probability is equal to or exceeds a predetermined probability, the determiner determines the present lane probability on the basis of output signals of the sensor and the curve's radius estimated by the curve's radius estimation device in accordance with a predetermined relationship between at least one of a first distance and a second distance and the present lane probability, and, the first distance representing how far the preceding vehicle is out of the lane in a lane-width direction, and the second distance representing how far the preceding vehicle is away from the present vehicle along with the lane in a vehicle traveling direction.